25 ISABE 2021
12–17 SEPTEMBER
OTTAWA, CANADA

CALL FOR PAPERS

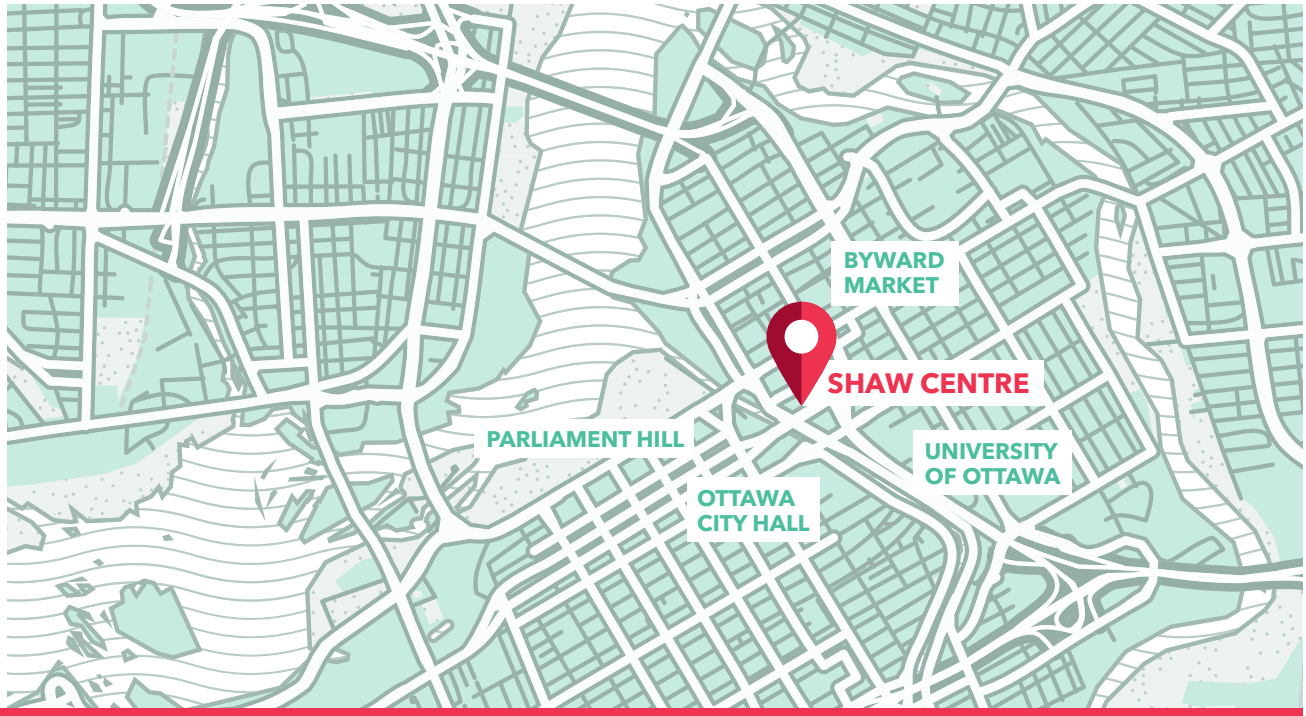
ISABE 2021

25th ISABE Conference

12–17 September 2021
Ottawa, Canada

National Research Council Canada
Conseil national de recherches Canada

ISABE
International Society for Air Breathing Engines



CONFERENCE DETAILS

CONFERENCE LOCATION

The 25th ISABE Conference will be held at the Shaw Centre, in the heart of Ottawa.

Find out more at: **www.shaw-centre.com**, **www.ottawatourism.ca** and **travel.gc.ca/canadian-tourism**

WELCOME TO OTTAWA, CANADA

As the incoming ISABE Vice-President, it is my privilege to welcome you to Ottawa, Canada for ISABE 2021 on its special golden jubilee anniversary. As a proud supporter of ISABE since its formation fifty years ago, my organization, the National Research Council of Canada, would like to extend a special welcome to all delegates of ISABE 2021.

With the 5th largest Aerospace industry, Canada is an Aerospace nation. The Canadian Aerospace industry is well diversified in the Civil, Defence and Space sectors, generates over $31 billlion in revenue each year, and employs 215,000 highly qualified professionals in every region of the country. Canadians are immensely proud of their aerospace heritage from the Avro Arrow, to the Canadarm. Canada is also a major player in the gas turbine segment, being home to the world's #1 manufacturer of turboprop and turboshaft engines, Pratt & Whitney Canada. Given our climate, Canada can also claim to be the engine icing certification capital of the world.

As Canada's Capital city, Ottawa is a hub for the Aerospace, Defence and Security sectors. Seven of the world's top ten Aerospace and Defence companies have their Canadian headquarters in Ottawa and it is home to Canada's armed forces, aerospace regulators, and the testing facilities of the National Research Council of Canada.

At ISABE 2021, it is my hope that you will have productive technical discussions, as well as plenty of opportunities to reconnect with old friends and make new acquaintances—all adding up to an enriching and memorable time.

During your stay with us, please take a moment to explore the City of Ottawa and its surrounding areas. With museums, galleries and landmarks like the Rideau Canal (a UNESCO World Heritage site) or the historic Byward Market within walking distance, you will have plenty to choose from. At the same time, you are never far from nature. You may also just be in time to treat yourself to our brilliant fall colours—a classic Canadian scenery at the nearby Gatineau Park.

Once again, we are delighted to welcome you to Ottawa for the 25th ISABE conference, and invite you to experience the best that the city has to offer during your stay.

DR. IBRAHIM YIMER

Ibrahim Yimer

ISABE Vice-President
Director-General, Aerospace, National Research Council of Canada

ABOUT ISABE

The International Society of Air Breathing Engines [ISABE] is an organisation that was formed to further the free exchange, on an international level, of knowledge in the field of air breathing propulsion for flight vehicles.

ISABE has national representatives from more than 25 nations and has held events on six continents. For more than 40 years, ISABE has produced some of the most memorable and important conferences in the field of air breathing propulsion.

The Society produces a major conference every two years with invited lectures, contributed technical paper sessions, pre-arranged sessions and special forums, along with social events for informal discussions, networking and relaxation.

Find out more at: **www.isabe.org**

PROGRAMME OF EVENTS

INVITED LECTURES

Lectures by distinguished thought leaders in air breathing engines and associated industries.

CONTRIBUTED TECHNICAL PAPER SESSIONS

Papers on topics associated with air breathing engines for flight vehicles and aeroderivative engines for power generation.

PRE-ARRANGED SESSIONS

Sessions of contributed technical papers on specific topics of current interest organised by the experts from various member nations.

ISABE & ICAS

A joint session provided by ISABE and ICAS.

NETWORKING AND SOCIALISING

Social events are planned to encourage informal discussions, networking and socialising between delegates. Technical exhibitions and visits will also be available.

There will be an opportunity to take part in excursions and cultural visits including the fine arts, Canadian social and political history. This will give you a taste of Ottawa museums and galleries.

There will also be a programme of events offered through local companies for those people accompanying delegates to Ottawa.

For more information on things to do in Ottawa visit **www.ottawatourism.ca**

PARTICIPATION

PROPOSALS FOR PARTICIPATION

You are invited to take part in the conference with a personal contribution as listed below.

- Technical paper sessions
- Pre-arranged sessions
- Special forum
- Technical exhibition

TECHNICAL PAPER SESSIONS

SUBMITTING A PAPER

Subject areas are listed on the following page and details for abstract and paper submission can be found opposite.

CHAIRING A SESSION

To offer to chair a session, please send an email to your national delegate [for the full list of delegates, please visit **www.isabe.org**] and copy your email to **NRC.ISABE2021-SIMA2021.CNRC@nrc-cnrc.gc.ca**

Please give details of the subject areas of your expertise.

PRE-ARRANGED SESSIONS

ORGANISE A PRE-ARRANGED SESSION

To offer to organise a pre-arranged session please select a co-organiser from a nation other than your own and jointly select a topic area.

For further information on how to proceed, please contact **NRC.ISABE2021-SIMA2021.CNRC@nrc-cnrc.gc.ca**

SUBMITTING A PAPER

Please note that different deadlines apply depending on which process you are submitting to. When preparing an abstract or paper please follow the guidelines provided in the "Instructions for Authors" at **www.isabe.org**

When you submit your extended abstract you will be asked to indicate which review track you prefer.

Review Track: Review of abstract & full paper.

Non-Review Track: Review of abstract only.

ABSTRACT AND PAPER SUBMISSION

This is the standard process adopted in previous ISABE conferences: an extended abstract of at least 2 pages is submitted to the ISABE Executive Committee, who will review it for publication.

SUBMISSION AND REVIEW TIMELINE

Extended abstracts for Review and Non-Review Track due	27 July, 2020
Full paper for consideration for Aeronautical Journal special edition	17 August, 2020
Abstract review feedback	5 October, 2020
Full paper on Review Track due	1 March, 2021
Review Track paper feedback	7 June, 2021
Full paper on Non-Review Track due	28 June, 2021
Early Bird Pre-registration	28 June, 2021
Revised Papers on Review Track due	2 August, 2021
ISABE2021 Ottawa	12–17 September, 2021

SUBJECT AREAS

Following is a list of major subject areas of interest. All aspects of air breathing engines for flight propulsion in all regimes of speed and aero-derivative engines for power production are included, as well as components that are ancillary to engines and new propulsion paradigms in terms of emerging technology and markets. The greatest emphasis is on creation and utilisation of the best technology for sustainable progress.

SYSTEMS

New developments in gas turbine engines, ramjet, scramjet engines, combined cycle engines, pulsed and other detonation engines, various assisted engines, micro-engines, multipurpose engines, integrated systems, hybrid systems and integration technologies.

COST AND BUSINESS

Economics of engine development, testing, production, certification, usage and maintenance, civil and military engine business, acquisition, ownership and marketing, lifecycle and other costs. New applications and markets.

ENVIRONMENT

Chemical and noise pollution.

SAFETY

Engine safety and engine-caused safety problems, material and structural failure. UAV and FOD ingestion. Cyber Security.

AEROMECHANICS, FLUTTER, VIBRATION, AND HIGH-CYCLE FATIGUE

Design, prediction and model validation. Random and intentional mistuning. Life prediction. Experimental methods.

ENGINEERING SCIENCES

Problems of fluid and gas dynamics, sprays, combustion, heat transfer, conventional and advanced materials, acoustics and noise.

THERMAL MANAGEMENT

Cooling technology, coolers, heat exchangers and energy bypass schemes, compressor and turbine cooling, scramjet cooling.

AERO-DERIVATIVES

Other applications of aero-derivative engine technology including power generation, pumping and maritime and land transport.

INTELLIGENT ENGINE CONTROL AND HEALTH MONITORING

Embedded sensors, telemetry, big data, cyber security, the internet of things.

MATERIALS AND STRUCTURES

Smart and multifunctional materials and structures, titanium technology, composites, ceramics, thermoelasticity, structures, coatings.

COMPRESSORS, TURBINES

Axial and centrifugal compressors, axial and other turbines, aerodynamics, mechanics.

HYBRID-ELECTRIC / ELECTRIC PROPULSION

Design, testing, and optimization of electric and/or hybrid-electric propulsion systems.

FUELS, INJECTION, IGNITION AND COMBUSTION

Fuels for gas turbines and ramjets/scramjets, alternate fuels, combined cycles, microengines, endothermic fuels for cooling, fuel cracking, injection technologies, ignition technologies, combustion technologies, combustion acoustics.

SIMULATION AND DESIGN

CFD, FEM, coupled multiphysics modelling, fluid-structure interaction, DOE and optimisation methods.

INTEGRATED TESTING, PREDICTION AND EVALUATION

Test and simulation methods.

MANUFACTURING PROCESSES

Machining, casting, additive manufacturing.

ENGINE AND FLEET OPERATIONS

Fleet management, lifing, operations, upgrades.

MAINTENANCE, REPAIR AND OVERHAUL SYNTHESIS METHODS

From concept to usable product; rational methods of synthesis, virtual development and testing.

ENGINE INTEGRATION

Intakes, nozzles, nacelles, distributed propulsion, embedded propulsion.

DIAGNOSTICS, INSTRUMENTATION AND SENSORS

Improved and novel sensors.

HYPERSONIC VEHICLE PROPULSION

Space launch vehicles, cruise vehicles, military systems. Engine technologies and integration.

STOVL VEHICLE PROPULSION

Thrust vector design options, controls, ground effects.

UNMANNED AIR VEHICLE PROPULSION

Propulsion and autonomous control systems for UAVs.

HELICOPTER PROPULSION

Small engines, propellers, special air intakes, noise control.

MICRO AND SMALL ENGINES

Components and systems. New markets for personal air transport.

EDUCATION AND TRAINING

Re-engineering of the gas turbine curriculum, education partnerships, best practices.

SKILLS CHALLENGES

Demographics, apprenticeships, global skills, systems engineers

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Contact ISABE

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